



Recra LabNet Philadelphia

Analytical Report

W.O. # : 10985-001-001-9999-00
Date Received: 08-31-99

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	<u>EPA /600</u>	<u>SW846</u>	<u>OTHER</u>
Acidity	305.1		
Alkalinity Bicarbonate Carbonate	310.1		
Ascorbic Acid	405.1		5210B (b)
Chromatography:			
Bromide Chloride Fluoride	300.0	9056	
Nitrate Nitrite Phosphate	300.0	9056	
Sulfate Formate Acetate Oxalate	300.0	9056	
Chloride	325.2	9251	
Chlorine, Residual	330.5 (mod)		
Cyanide, Amenable to Chlorination	335.2	9010B	
Cyanide, Total	335.2	9010B	9014 ILMO4.0 (e)
Cyanide, Weak Acid Dissociable			412 (a) 4500CN-I (b)
COD	410.4(mod)		5220C (b)
Color	110.2		
Corrosivity by Coupon		1110(mod)	
Chromium VI		7196A	3500Cr-D (b)
Fluoride	340.2		4500-FC
Hardness, Calcium	215.2		
Hardness, Total	130.2		
Iodide			ASTM D19P202 (1)
Surfactant	425.1		
Nitrate-Nitrite Nitrate Nitrite	353.2		
Ammonia	350.3		
Total Kjeldahl Organic Nitrogen	351.4		
Total Organic Inorganic Carbon	415.1	9060	
Oil & Grease	413.1	9070	
pH pH; paper	150.1	9040B	9041A
Petroleum Hydrocarbons, Total Recoverable	418.1		
Phenol	420.1	420.2	9065 9066
Ortho Total Phosphate	365.2		4500-P B C
Salinity			210A (a) 2520 (b)
Settleable Solids	160.5		
Sulfide	376.1	376.2	9030B/9034 (acid soluble)
Reactive Cyanide Sulfide		Section 7.3	
Silica	370.1		
Sulfite	377.1		
Sulfate	375.4	9038	
Specific Conductance	120.1	9050A	
Specific Gravity			D5057-90 213E (a)
Synthetic Precipitation Leach		1312	
Total Dissolved Suspended Solids	160.1	.2 .3	
Total Organic Halides	450.1	9020B	
Turbidity	180.1		
Volatile Solids:			
Total Dissolved Suspended	160.4		
Other:		Method:	

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METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

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INORGANICS DATA SUMMARY REPORT 09/29/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9908L931

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	BOW8W0	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
		Nitrate Nitrite	0.02 u	MG-N/L	0.02	1.0
		Ammonia, as N	0.10 u	MG/L	0.10	1.0
		pH	6.6	PH UNIT	0.01	1.0
		Sulfide	1.0 u	MG/L	1.0	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/29/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9908L931

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
BLANK10	99LIC073-MB1	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	99LN3046-MB1	Nitrate Nitrite	0.02 u	MG-N/L	0.02	1.0
BLANK10	99LAMA35-MB1	Ammonia, as N	0.10 u	MG/L	0.10	1.0
BLANK10	99LSDA42-MB1	Sulfide	1.0 u	MG/L	1.0	1.0

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INORGANICS ACCURACY REPORT 09/29/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9908L931

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
*****	*****	*****	*****	*****	*****	*****	*****
-001	BOW8W0	Chloride by IC	4.8	0.18	5.0	92.4	1.0
		Fluoride by IC	10.5	0.00	10.0	104.7	1.0
		Nitrite by IC	4.8	0.25u	5.0	97.0	1.0
		Nitrate by IC	4.8	0.25u	5.0	95.3	1.0
		Phosphate by IC	4.9	0.25u	5.0	98.2	1.0
		Sulfate by IC	4.8	0.25u	5.0	96.0	1.0
		Nitrate Nitrite	0.52	0.02u	0.50	103.8	1.0
		Nitrate Nitrite MSD	0.52	0.02u	0.50	103.6	1.0
		Ammonia, as N	1.0	0.10u	1.0	104.0	1.0
		Sulfide	9.9	0.00	10.0	99.0	1.0
		Sulfide MSD	9.7	0.00	10.0	97.0	1.0
BLANK10	99LIC073-MB1	Chloride by IC	4.8	0.25u	5.0	95.5	1.0
		Fluoride by IC	10.4	0.50u	10.0	103.6	1.0
		Nitrite by IC	4.8	0.25u	5.0	96.5	1.0
		Nitrate by IC	4.9	0.25u	5.0	97.3	1.0
		Phosphate by IC	4.9	0.25u	5.0	99.0	1.0
		Sulfate by IC	4.8	0.25u	5.0	95.4	1.0
BLANK10	99LN3046-MB1	Nitrate Nitrite	0.51	0.02u	0.50	102.8	1.0
		Nitrate Nitrite MSD	0.51	0.02u	0.50	102.4	1.0
BLANK10	99LAMA35-MB1	Ammonia, as N	1.0	0.10u	1.0	103.0	1.0
		Ammonia, as N MSD	1.0	0.10u	1.0	101.0	1.0
BLANK10	99LSDA42-MB1	Sulfide	10.0	1.0 u	10.0	100	1.0

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INORGANICS DUPLICATE SPIKE REPORT 09/29/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9908L931

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1	SPIKE#2	%DIFF
			%RECOV	%RECOV	
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-001	BOW8W0	Nitrate Nitrite	103.8	103.6	0.19
		Sulfide	99.0	97.0	2.0
BLANK10	99LN3046-MB1	Nitrate Nitrite	102.8	102.4	0.39
BLANK10	99LAMA35-MB1	Ammonia, as N	103.0	101.0	2.0

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INORGANICS PRECISION REPORT 09/29/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9908L931

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL		DILUTION
			RESULT	REPLICATE RPD	
*****	*****	*****	*****	*****	*****
-001REP	BOWSWO	Chloride by IC	0.25u	0.25u NC	1.0
		Fluoride by IC	0.50u	0.50u NC	1.0
		Nitrite by IC	0.25u	0.25u NC	1.0
		Nitrate by IC	0.25u	0.25u NC	1.0
		Phosphate by IC	0.25u	0.25u NC	1.0
		Sulfate by IC	0.25u	0.25u NC	1.0
		Nitrate Nitrite	0.02u	0.02u NC	1.0
		Ammonia, as N	0.10u	0.10u NC	1.0
		pH	6.6	6.6 0.3	1.0
		Sulfide	1.0 u	1.0 u NC	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 08/31/99

RFW LOT # :9908L931

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOW8W0						
CHLORIDE BY IC	001	W	99LIC073	08/27/99	09/01/99	09/01/99
CHLORIDE BY IC	001 REP	W	99LIC073	08/27/99	09/01/99	09/01/99
CHLORIDE BY IC	001 MS	W	99LIC073	08/27/99	09/01/99	09/01/99
FLUORIDE BY IC	001	W	99LIC073	08/27/99	09/01/99	09/01/99
FLUORIDE BY IC	001 REP	W	99LIC073	08/27/99	09/01/99	09/01/99
FLUORIDE BY IC	001 MS	W	99LIC073	08/27/99	09/01/99	09/01/99
NITRITE BY IC	001	W	99LIC073	08/27/99	09/01/99	09/01/99
NITRITE BY IC	001 REP	W	99LIC073	08/27/99	09/01/99	09/01/99
NITRITE BY IC	001 MS	W	99LIC073	08/27/99	09/01/99	09/01/99
NITRATE BY IC	001	W	99LIC073	08/27/99	09/01/99	09/01/99
NITRATE BY IC	001 REP	W	99LIC073	08/27/99	09/01/99	09/01/99
NITRATE BY IC	001 MS	W	99LIC073	08/27/99	09/01/99	09/01/99
PHOSPHATE BY IC	001	W	99LIC073	08/27/99	09/01/99	09/01/99
PHOSPHATE BY IC	001 REP	W	99LIC073	08/27/99	09/01/99	09/01/99
PHOSPHATE BY IC	001 MS	W	99LIC073	08/27/99	09/01/99	09/01/99
SULFATE BY IC	001	W	99LIC073	08/27/99	09/01/99	09/01/99
SULFATE BY IC	001 REP	W	99LIC073	08/27/99	09/01/99	09/01/99
SULFATE BY IC	001 MS	W	99LIC073	08/27/99	09/01/99	09/01/99
NITRATE NITRITE	001	W	99LN3046	08/27/99	09/22/99	09/22/99
NITRATE NITRITE	001 REP	W	99LN3046	08/27/99	09/22/99	09/22/99
NITRATE NITRITE	001 MS	W	99LN3046	08/27/99	09/22/99	09/22/99
NITRATE NITRITE	001 MSD	W	99LN3046	08/27/99	09/22/99	09/22/99
AMMONIA	001	W	99LAMA35	08/27/99	09/15/99	09/15/99
AMMONIA	001 REP	W	99LAMA35	08/27/99	09/15/99	09/15/99
AMMONIA	001 MS	W	99LAMA35	08/27/99	09/15/99	09/15/99
PH	001	W	99LPH093	08/27/99	08/31/99	08/31/99
PH	001 REP	W	99LPH093	08/27/99	08/31/99	08/31/99
SULFIDE	001	W	99LSDA42	08/27/99	09/02/99	09/02/99
SULFIDE	001 REP	W	99LSDA42	08/27/99	09/02/99	09/02/99
SULFIDE	001 MS	W	99LSDA42	08/27/99	09/02/99	09/02/99
SULFIDE	001 MSD	W	99LSDA42	08/27/99	09/02/99	09/02/99

LAB QC:

CHLORIDE BY IC	MB1	W	99LIC073	N/A	09/01/99	09/01/99
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Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 08/31/99

RFW LOT # :9908L931

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	MB1 BS	W	99LIC073	N/A	09/01/99	09/01/99
FLUORIDE BY IC	MB1	W	99LIC073	N/A	09/01/99	09/01/99
FLUORIDE BY IC	MB1 BS	W	99LIC073	N/A	09/01/99	09/01/99
NITRITE BY IC	MB1	W	99LIC073	N/A	09/01/99	09/01/99
NITRITE BY IC	MB1 BS	W	99LIC073	N/A	09/01/99	09/01/99
NITRATE BY IC	MB1	W	99LIC073	N/A	09/01/99	09/01/99
NITRATE BY IC	MB1 BS	W	99LIC073	N/A	09/01/99	09/01/99
PHOSPHATE BY IC	MB1	W	99LIC073	N/A	09/01/99	09/01/99
PHOSPHATE BY IC	MB1 BS	W	99LIC073	N/A	09/01/99	09/01/99
SULFATE BY IC	MB1	W	99LIC073	N/A	09/01/99	09/01/99
SULFATE BY IC	MB1 BS	W	99LIC073	N/A	09/01/99	09/01/99
NITRATE NITRITE	MB1	W	99LN3046	N/A	09/22/99	09/22/99
NITRATE NITRITE	MB1 BS	W	99LN3046	N/A	09/22/99	09/22/99
NITRATE NITRITE	MB1 BSD	W	99LN3046	N/A	09/22/99	09/22/99
AMMONIA	MB1	W	99LAMA35	N/A	09/15/99	09/15/99
AMMONIA	MB1 BS	W	99LAMA35	N/A	09/15/99	09/15/99
AMMONIA	MB1 BSD	W	99LAMA35	N/A	09/15/99	09/15/99
SULFIDE	MB1	W	99LSDA42	N/A	09/02/99	09/02/99
SULFIDE	MB1 BS	W	99LSDA42	N/A	09/02/99	09/02/99

99082 931

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

⑧ acms vov metals
Corey dig.
BNA personne wet lab

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
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[illegible]

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-085-02		Page 1 of 1	
Collector Doug Bowers/Brent Porter				Company Contact Chris Cearlock		Telephone No. 372-9574		Project Coordinator TRENT, SJ		Price Code 7N Data Turnaround 45 Days	
Project Designation 200 Area Source characterization - 200-CW-1 OU - QC Sa				Sampling Location 200 East 200 CW1		SAF No. B99-085					
Ice Chest No. ERC 830				Field Logbook No. EL-1511		Method of Shipment Federal Express					
Shipped To TMA/RECRA 8-27-99				Offsite Property No. A99 0234		Bill of Lading/Air Bill No. 4235 795 28830					
						COA B20CW1 671E					

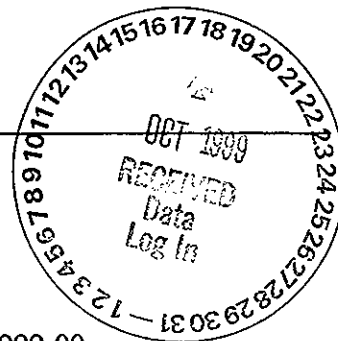
POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HCl or H2SO4 to pH <2 Cool	HNO3 to pH <2			
	Type of Container	P	P	P	aG	P	aGs*	P			
	No. of Container(s)	1	1	1	2	2	3	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			

SAMPLE ANALYSIS				Sulfides - 9030	See item (1) in Special Instructions.	NO2/NO3 - 353.1; Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha; Gross Beta	VOA - 8260A (TCL); VOA - 8260A (Add- On) (1- Propanol, Ethanol)	See item (2) in Special Instructions.			
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Sample No.	Matrix *	Sample Date	Sample Time										
BOW8W0	Water	8-27-99	0640	X	X	X	X		X	X			
BOW8W1	Water	8-27-99	0520						X				

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By <i>Doug Bowers</i> Date/Time <i>8-27-99/1300</i>	Received By <i>Ref 1A</i> Date/Time <i>8-27-99/1300</i>	See Chain of Custody comments on SAF for special instructions. COLLECTOR NOT AVAILABLE PERSONAL CLS. (1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate), pH (Water) - 9040 (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc)
Relinquished By <i>Ref 1A</i> Date/Time <i>8/30/99 11:00</i>	Received By <i>Chico</i> Date/Time <i>8/30/99 1100</i>	
Relinquished By <i>Chico</i> Date/Time <i>8/30/99 1400</i>	Received By <i>PEDEX</i> Date/Time <i>8/30/99 1400</i>	
Relinquished By <i>Ref 1A</i> Date/Time <i>8/31/99 0930</i>	Received By <i>Dr. P. Smith</i> Date/Time <i>8/31/99 0930</i>	
Matrix * Soil Water Vapor Other Solid Other Liquid		From non Red area

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time



**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-085
RFW# : 9908L931
SDG/SAF# : B99-085/H0509

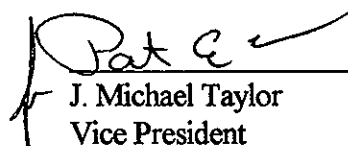
W.O.# : 10985-001-001-9999-00
Date Received: 08-31-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 1 water sample.
2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL or samples greater than 20X MB value)}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of **13** pages.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.



J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

mld/m08-931

9-30-99
Date



METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this

Recra Lot#: 9908L931

Leaching Procedure: 1310 1311 1312 Other:

CLP Metals Digestion and Analysis Methods: ILM03.0 ILM04.0

Metals Digestion Methods: 3005A 3010A 3015 3020A 3050A 3051 200.7 SS17
Other:

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	6010B	200.7			99
Antimony	6010B 7041 ⁵	200.7 204.2			99
Arsenic	6010B 7060A ⁵	200.7 206.2	3113B		99
Barium	6010B	200.7			99
Beryllium	6010B	200.7			99
Bismuth	6010B ¹	200.7 ¹		1620	99
Boron	6010B	200.7			99
Cadmium	6010B 7131A ⁵	200.7 213.2			99
Calcium	6010B	200.7			99
Chromium	6010B 7191 ⁵	200.7 218.2			SS17
Cobalt	6010B	200.7			99
Copper	6010B 7211 ⁵	200.7 220.2			99
Iron	6010B	200.7			99
Lead	6010B 7421 ⁵	200.7 239.2	3113B		99
Lithium	6010B 7430 ⁴	200.7		1620	99
Magnesium	6010B	200.7			99
Manganese	6010B	200.7			99
Mercury	7470A ³ 7471A ³	245.1 ² 245.5 ²			99
Molybdenum	6010B	200.7			99
Nickel	6010B	200.7			99
Potassium	6010B 7610 ⁴	200.7 258.1 ⁴			99
Rare Earths	6010B ¹	200.7 ¹		1620	99
Selenium	6010B 7740 ⁵	200.7 270.2	3113B		99
Silicon	6010B ¹	200.7		1620	99
Silica	6010B	200.7		1620	99
Silver	6010B 7761 ⁵	200.7 272.2			99
Sodium	6010B 7770 ⁴	200.7 273.1 ⁴			99
Strontium	6010B	200.7			99
Thallium	6010B 7841 ⁵	200.7 279.2 200.9			99
Tin	6010B	200.7			99
Titanium	6010B	200.7			99
Uranium	6010B ¹	200.7 ¹		1620	99
Vanadium	6010B	200.7			99
Zinc	6010B	200.7			99
Zirconium	6010B ¹	200.7 ¹		1620	99

Other:

Method:

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/30/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9908L931

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	BOWSWO	Silver, Total	1.0 u	UG/L	1.0	1.0
		Arsenic, Total	3.3 u	UG/L	3.3	1.0
		Barium, Total	0.65	UG/L	0.30	1.0
		Beryllium, Total	0.13	UG/L	0.10	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Chromium, Total	0.80 u	UG/L	0.80	1.0
		Copper, Total	4.3	UG/L	1.2	1.0
		Nickel, Total	1.2 u	UG/L	1.2	1.0
		Lead, Total	2.1 u	UG/L	2.1	1.0
		Antimony, Total	2.5 u	UG/L	2.5	1.0
		Selenium, Total	3.7 u	UG/L	3.7	1.0
		Vanadium, Total	0.60 u	UG/L	0.60	1.0
		Zinc, Total	3.7	UG/L	0.80	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/30/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9908L931

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
BLANK1	99L0645-MB1	Silver, Total	1.0	u UG/L	1.0	1.0
		Arsenic, Total	3.3	u UG/L	3.3	1.0
		Barium, Total	0.38	UG/L	0.30	1.0
		Beryllium, Total	0.10	u UG/L	0.10	1.0
		Cadmium, Total	0.30	u UG/L	0.30	1.0
		Chromium, Total	0.80	u UG/L	0.80	1.0
		Copper, Total	1.2	u UG/L	1.2	1.0
		Nickel, Total	1.2	u UG/L	1.2	1.0
		Lead, Total	2.1	u UG/L	2.1	1.0
		Antimony, Total	2.5	u UG/L	2.5	1.0
		Selenium, Total	3.7	u UG/L	3.7	1.0
		Vanadium, Total	0.60	u UG/L	0.60	1.0
		Zinc, Total	0.80	u UG/L	0.80	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 09/30/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9908L931

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
*****	*****	*****	*****	*****	*****	*****	*****
-001	BOW8W0	Silver, Total	49.4	1.0 u	50.0	98.8	1.0
		Arsenic, Total	2000	3.3 u	2000	99.9	1.0
		Barium, Total	1920	0.65	2000	95.9	1.0
		Beryllium, Total	49.6	0.13	50.0	98.9	1.0
		Cadmium, Total	49.7	0.30u	50.0	99.4	1.0
		Chromium, Total	196	0.80u	200	98.2	1.0
		Copper, Total	243	4.3	250	95.6	1.0
		Nickel, Total	495	1.2 u	500	99.1	1.0
		Lead, Total	494	2.1 u	500	98.7	1.0
		Antimony, Total	495	2.5 u	500	98.9	1.0
		Selenium, Total	2000	3.7 u	2000	100.1	1.0
		Vanadium, Total	490	0.60u	500	98.0	1.0
		Zinc, Total	485	3.7	500	96.2	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 09/30/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9908L931

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE	RPD	
*****	*****	*****	*****	*****	*****	*****
-001REP	BOWSWO	Silver, Total	1.0 u	1.0 u	NC	1.0
		Arsenic, Total	3.3 u	3.3 u	NC	1.0
		Barium, Total	0.65	12.2	179.8	1.0
		Beryllium, Total	0.13	0.10u	NC <i>20</i>	1.0
		Cadmium, Total	0.30u	0.30u	NC	1.0
		Chromium, Total	0.80u	0.80u	NC	1.0
		Copper, Total	4.3	3.7	15.0	1.0
		Nickel, Total	1.2 u	1.2 u	NC	1.0
		Lead, Total	2.1 u	2.1 u	NC	1.0
		Antimony, Total	2.5 u	2.5 u	NC	1.0
		Selenium, Total	3.7 u	3.7 u	NC	1.0
		Vanadium, Total	0.60u	0.60u	NC	1.0
		Zinc, Total	3.7	3.8	2.7	1.0

*Correction
MD 9/30/99*

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/30/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9908L931

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
*****	*****	*****	*****	*****	*****	*****
LCS1	99L0645-LC1	Silver, LCS	490	500	UG/L	98.0
		Arsenic, LCS	9940	10000	UG/L	99.4
		Barium, LCS	4880	5000	UG/L	97.6
		Beryllium, LCS	248	250	UG/L	99.4
		Cadmium, LCS	250	250	UG/L	100
		Chromium, LCS	497	500	UG/L	99.4
		Copper, LCS	1210	1250	UG/L	96.4
		Nickel, LCS	2010	2000	UG/L	100.4
		Lead, LCS	2490	2500	UG/L	99.6
		Antimony, LCS	2990	3000	UG/L	99.5
		Selenium, LCS	10000	10000	UG/L	100.2
		Vanadium, LCS	2480	2500	UG/L	99.1
		Zinc, LCS	981	1000	UG/L	98.1

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 08/31/99

RFW LOT # :9908L931

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOW8W0						
SILVER, TOTAL	001	W	99L0645	08/27/99	09/22/99	09/23/99
SILVER, TOTAL	001 REP	W	99L0645	08/27/99	09/22/99	09/23/99
SILVER, TOTAL	001 MS	W	99L0645	08/27/99	09/22/99	09/23/99
ARSENIC, TOTAL	001	W	99L0645	08/27/99	09/22/99	09/23/99
ARSENIC, TOTAL	001 REP	W	99L0645	08/27/99	09/22/99	09/23/99
ARSENIC, TOTAL	001 MS	W	99L0645	08/27/99	09/22/99	09/23/99
BARIUM, TOTAL	001	W	99L0645	08/27/99	09/22/99	09/23/99
BARIUM, TOTAL	001 REP	W	99L0645	08/27/99	09/22/99	09/23/99
BARIUM, TOTAL	001 MS	W	99L0645	08/27/99	09/22/99	09/23/99
BERYLLIUM, TOTAL	001	W	99L0645	08/27/99	09/22/99	09/23/99
BERYLLIUM, TOTAL	001 REP	W	99L0645	08/27/99	09/22/99	09/23/99
BERYLLIUM, TOTAL	001 MS	W	99L0645	08/27/99	09/22/99	09/23/99
CADMIUM, TOTAL	001	W	99L0645	08/27/99	09/22/99	09/23/99
CADMIUM, TOTAL	001 REP	W	99L0645	08/27/99	09/22/99	09/23/99
CADMIUM, TOTAL	001 MS	W	99L0645	08/27/99	09/22/99	09/23/99
CHROMIUM, TOTAL	001	W	99L0645	08/27/99	09/22/99	09/23/99
CHROMIUM, TOTAL	001 REP	W	99L0645	08/27/99	09/22/99	09/23/99
CHROMIUM, TOTAL	001 MS	W	99L0645	08/27/99	09/22/99	09/23/99
COPPER, TOTAL	001	W	99L0645	08/27/99	09/22/99	09/23/99
COPPER, TOTAL	001 REP	W	99L0645	08/27/99	09/22/99	09/23/99
COPPER, TOTAL	001 MS	W	99L0645	08/27/99	09/22/99	09/23/99
NICKEL, TOTAL	001	W	99L0645	08/27/99	09/22/99	09/23/99
NICKEL, TOTAL	001 REP	W	99L0645	08/27/99	09/22/99	09/23/99
NICKEL, TOTAL	001 MS	W	99L0645	08/27/99	09/22/99	09/23/99
LEAD, TOTAL	001	W	99L0645	08/27/99	09/22/99	09/23/99
LEAD, TOTAL	001 REP	W	99L0645	08/27/99	09/22/99	09/23/99
LEAD, TOTAL	001 MS	W	99L0645	08/27/99	09/22/99	09/23/99
ANTIMONY, TOTAL	001	W	99L0645	08/27/99	09/22/99	09/23/99
ANTIMONY, TOTAL	001 REP	W	99L0645	08/27/99	09/22/99	09/23/99
ANTIMONY, TOTAL	001 MS	W	99L0645	08/27/99	09/22/99	09/23/99
SELENIUM, TOTAL	001	W	99L0645	08/27/99	09/22/99	09/23/99
SELENIUM, TOTAL	001 REP	W	99L0645	08/27/99	09/22/99	09/23/99
SELENIUM, TOTAL	001 MS	W	99L0645	08/27/99	09/22/99	09/23/99
VANADIUM, TOTAL	001	W	99L0645	08/27/99	09/22/99	09/23/99
VANADIUM, TOTAL	001 REP	W	99L0645	08/27/99	09/22/99	09/23/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 08/31/99

RFW LOT # :9908L931

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	001 MS	W	99L0645	08/27/99	09/22/99	09/23/99
ZINC, TOTAL	001	W	99L0645	08/27/99	09/22/99	09/23/99
ZINC, TOTAL	001 REP	W	99L0645	08/27/99	09/22/99	09/23/99
ZINC, TOTAL	001 MS	W	99L0645	08/27/99	09/22/99	09/23/99

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L0645	N/A	09/22/99	09/23/99
SILVER, TOTAL	MB1	W	99L0645	N/A	09/22/99	09/23/99
ARSENIC LABORATORY	LC1 BS	W	99L0645	N/A	09/22/99	09/23/99
ARSENIC, TOTAL	MB1	W	99L0645	N/A	09/22/99	09/23/99
BARIUM LABORATORY	LC1 BS	W	99L0645	N/A	09/22/99	09/23/99
BARIUM, TOTAL	MB1	W	99L0645	N/A	09/22/99	09/23/99
BERYLLIUM LABORATORY	LC1 BS	W	99L0645	N/A	09/22/99	09/23/99
BERYLLIUM, TOTAL	MB1	W	99L0645	N/A	09/22/99	09/23/99
CADMIUM LABORATORY	LC1 BS	W	99L0645	N/A	09/22/99	09/23/99
CADMIUM, TOTAL	MB1	W	99L0645	N/A	09/22/99	09/23/99
CHROMIUM LABORATORY	LC1 BS	W	99L0645	N/A	09/22/99	09/23/99
CHROMIUM, TOTAL	MB1	W	99L0645	N/A	09/22/99	09/23/99
COPPER LABORATORY	LC1 BS	W	99L0645	N/A	09/22/99	09/23/99
COPPER, TOTAL	MB1	W	99L0645	N/A	09/22/99	09/23/99
NICKEL LABORATORY	LC1 BS	W	99L0645	N/A	09/22/99	09/23/99
NICKEL, TOTAL	MB1	W	99L0645	N/A	09/22/99	09/23/99
LEAD LABORATORY	LC1 BS	W	99L0645	N/A	09/22/99	09/23/99
LEAD, TOTAL	MB1	W	99L0645	N/A	09/22/99	09/23/99
ANTIMONY LABORATORY	LC1 BS	W	99L0645	N/A	09/22/99	09/23/99
ANTIMONY, TOTAL	MB1	W	99L0645	N/A	09/22/99	09/23/99
SELENIUM LABORATORY	LC1 BS	W	99L0645	N/A	09/22/99	09/23/99
SELENIUM, TOTAL	MB1	W	99L0645	N/A	09/22/99	09/23/99
VANADIUM LABORATORY	LC1 BS	W	99L0645	N/A	09/22/99	09/23/99
VANADIUM, TOTAL	MB1	W	99L0645	N/A	09/22/99	09/23/99
ZINC LABORATORY	LC1 BS	W	99L0645	N/A	09/22/99	09/23/99
ZINC, TOTAL	MB1	W	99L0645	N/A	09/22/99	09/23/99

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Page 1 of 1RECR.
LabNe

⑧. acms vva metals
Corey dig.
BNA remove wet lab

Client <u>TNU-Hanford BAA-085</u>	Refrigerator #	1	6					6		6	6	6			
Est. Final Proj. Sampling Date	#/Type Container	Liquid	3g	2g				1p		1p	1p	1p			
Project # <u>10985-001-001-9999-00</u>		Solid													
Project Contact/Phone #	Volume	Liquid	40	1hr				1hr		500	1hr	1hr			
RECRA Project Manager <u>OT</u>		Solid						500		2nAc					
QC <u>Spec</u> Del <u>Std</u> TAT <u>30 day</u>	Preservatives		HCl					HNO3		NH4H	-	H2SO4			
Date Rec'd <u>8/31/99</u> Date Due <u>9/30/99</u>	ANALYSES REQUESTED	ORGANIC						INORG							
Account #		VOA	BNA	Pest/PCB	Herb					Metal	CN				

[illegible]

Ref # B99-085

**COMPOSITE
WASTE**

→ 1. pH, ICNO₂, ICNO₃, ICPO₄ rec'd
 2. out of hold.
 OGCS₈ = 1-propanol, ethanol
 Met(1) = As, Ba, Cd, Cr, Cu, Pb, Ni, Se,
 5. ag. V, Zn, Be ^{9/2/99 added Be per pm}
 Ang(1) = pH, ICCL, ICFL, ICNO₂, ICNO₃, ICPO₄, ICSD

RECRA LabNet Use Only

Samples were ☒ 1) Shipped ☐ or
Hand Delivered ☐

Airbill #

2) Ambient or Chilled

3) Received in Good

Condition Y or N

4) Labels Indicate Properly Preserved

Y or N

5) Received Within

Holding Titles	Y or N	
	Y	N
1. <u>1980</u>		
2. <u>1981</u>		
3. <u>1982</u>		
4. <u>1983</u>		
5. <u>1984</u>		
6. <u>1985</u>		
7. <u>1986</u>		
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42. <u>2021</u>		
43. <u>2022</u>		
44. <u>2023</u>		
45. <u>2024</u>		
46. <u>2025</u>		
47. <u>2026</u>		
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109. <u>2088</u>		
110. <u>2089</u>		
111. <u>2090</u>		
112. <u>2091</u>		
113. <u>2092</u>		
114. <u>2093</u>		
115. <u>2094</u>		

COC Tape was:

1) Present on Outer
Package Y or N

2) Unbroken on Outer

3) Present on Sample

4) Unbroken on

Sample Y or N

COC Record Present
Upon Sample Rec't

Cooler ☒ Y ☐ N

Discrepancies Between
Samples Labels and
COC Record? Y or N

*423579528830

Relinquished by	Received by	Date	Time
EC-60	D. R. White	8/31	0930

Relinquished by	Received by	Date	Time
	Original		
	Rewritten		

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-085-02		Page <u>1</u> of <u>1</u>	
Collector Doug Bowers/Brent Porter		Company Contact Chris Cearlock		Telephone No. 372-9574		Project Coordinator TRENT, SJ		Price Code 7N		Data Turnaround 45 Days	
Project Designation 200 Area Source characterization - 200-CW-1 OU - QC Sa		Sampling Location 200 East 200 CW1		SAF No. B99-085							
Ice Chest No. ERC 830		Field Logbook No. EL-1511		Method of Shipment Federal Express							
Shipped To TMA/RECRA 8-28-99		Offsite Property No. A99 0234		Bill of Lading/Air Bill No. 4235 795 28830							
				COA B20CW1 671e							

POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage	Preservation	ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HCl or H2SO4 to pH <2 Cool	HNO3 to pH <2			
	Type of Container	P	P	P	aG	P	aGs*	P			
	No. of Container(s)	1	1	1	2	2	3	3			
	Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			

SAMPLE ANALYSIS	Sulfides - 9030	See item (1) in Special Instructions.	NO2/NO3 - 353.1; Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha; Gross Beta	VOA - 8260A (TCL); VOA - 8260A (Add- On) (1- Propanol, Ethanol)	See item (2) in Special Instructions.			
------------------------	-----------------	---	---	---------------------------	----------------------------	--	---	--	--	--

Sample No.	Matrix *	Sample Date	Sample Time	X	X	X	X	X	X	X	X
BOW8W0	Water	8-27-99	0640	X	X	X	X		X	X	
BOW8W1	Water	8-27-99	0520						X		

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS See Chain of Custody comments on SAF for special instructions. COLLECTOR NOT AVAILABLE FOR SIGNATURE (1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Phosphate, Sulfate), pH (Water) - 9040 (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc)	Matrix * Soil Water Vapor Other Solid Other Liquid
Relinquished By <i>Doug Bowers</i>	Date/Time <i>8-27-99/1300</i>	Received By <i>Ref 1A</i>	Date/Time <i>8-27-99/1300</i>
Relinquished By <i>Ref 1A</i>	Date/Time <i>8/30/99 11:00</i>	Received By <i>Chico</i>	Date/Time <i>8/30/99 1100</i>
Relinquished By <i>Chico</i>	Date/Time <i>8/30/99 1400</i>	Received By <i>PEDEX</i>	Date/Time <i>8/30/99 1400</i>
Relinquished By <i>Ref 1A</i>	Date/Time <i>8/31/99 0920</i>	Received By <i>Dr. P. Smith</i>	Date/Time <i>8/31/99 0920</i>

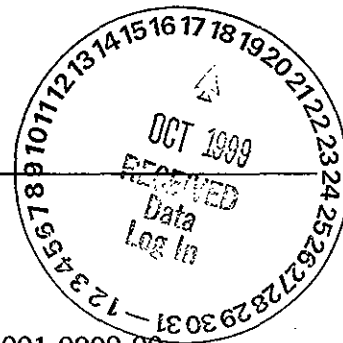
LABORATORY SECTION	Received By _____ Title _____	Date/Time _____
FINAL SAMPLE DISPOSITION	Disposal Method _____	Disposed By _____ Date/Time _____



**RECRA
ENVIRONMENTAL
INC.**

Chemical and Environmental Measurement Information

**Recra LabNet Philadelphia
Analytical Report**



Client: TNU HANFORD B99-078

RFW #: 9908L931

SDG/SAF#: H0509/B99-078

W.O. #: 10985-001-001-9999-00

Date Received: 08-31-99

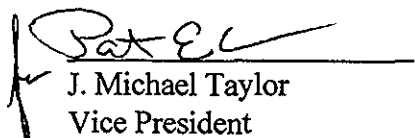
GC SCAN

The set of samples consisted of two (2) water samples collected on 08-27-99.

The samples and their associated QC samples were prepared on 09-02-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and Butanol on 09-02-99.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The samples were packaged and stored as specified in the method protocol; the cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. All initial calibrations associated with this data set were within acceptance criteria.
4. Continuing calibration criteria ($\pm 15\%$) were exceeded for the continuing calibration verification standard analyzed prior to the sample extracts. Outlying standard(s) generally exhibited increased instrument response. However sample data were not impacted as target analytes were not detected in the associated samples analyzed immediately after such standard(s). A copy of the Sample Discrepancy Report (SDR) has been enclosed in the data package.
5. Surrogates were not used for this analysis.
6. The blank spike recovery was within advisory control limits of 50%-150%.
7. All matrix spike recoveries were within advisory control limits of 50%-150%.


J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-20-99
Date

r:\share\lc\gcscan\08-931.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 7 pages.

GLOSSARY OF OGCSC DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates spiked compound.

Initiator: C. Schnell
Date: 9/16/99
Client: TNU-Hanford

RFW Batch: 9908L821
Samples: 9908L851
Method: SWB46/MCAVW/CLP/

Parameter: OGSC
Matrix:
Prep Batch: Multiple

1. Reason for SDR

a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C
☐ Transcription Error ☐ Wrong Test Code ☐ Other

b. General Discrepancy

☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date:

c. QC Problem (Include all relevant specific results; attach data if necessary)

CCV response somewhat erratic during sample analysis, most being high. In cases whereby instrument response decreased, the decrease did not exceed -20% Deviation.

2. Known or Probable Causes(s)

- Heavy analysis load combined with aqueous matrix contributes to reduced stability of instrument response compared to solvent type matrices.

3. Discussion and Proposed Action

Other Description:

☐ Re-log
☐ Entire Batch
☐ Following Samples:
☐ Re-leach
☐ Re-extract
☐ Re-digest
☐ Revise EDD
☐ Change Test Code to
☐ Place On/Take Off Hold (circle)

- No positives found in any samples.
- The laboratory limit of $\pm 15\%$ Deviation is derived from common analyses and may not be applicable to extended runs of aqueous samples where such criteria may not be readily achievable.

4. Project Manager Instructions...signature/date:

☐ Concur with Proposed Action
☐ Disagree with Proposed Action; See Instruction
☐ Include in Case Narrative
☐ Client Contacted:
☐ Date/Person
☐ Add
☐ Cancel

Michelle F. Johnson 9/16/99

5. Final Action...signature/date:

Other Explanation:

☐ Verified re-[log][leach][extract][digest][analysis] (circle)
☒ Included in Case Narrative
☐ Hard Copy COC Revised
☐ Electronic COC Revised
☐ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
<u>2</u>	<input checked="" type="checkbox"/> Initiator	<input type="checkbox"/>	<input type="checkbox"/> Metals: Doughty
<u>I</u>	<input checked="" type="checkbox"/> Lab Manager: M. Taylor	<input type="checkbox"/>	<input type="checkbox"/> Inorganic: Perrone
<u>4</u>	<input checked="" type="checkbox"/> Project Mgr: Stone/Carey/Schrenkel/Johnson	<input type="checkbox"/>	<input type="checkbox"/> GC/LC: Schnell
<u>2</u>	<input checked="" type="checkbox"/> Section Mgr: Wesson/Daniels	<input type="checkbox"/>	<input type="checkbox"/> MS: LeMin/Taylor
<u>2</u>	<input checked="" type="checkbox"/> QA (file): Racioppi	<input type="checkbox"/>	<input type="checkbox"/> Log-in: Toder
<u>2</u>	<input type="checkbox"/> Data Management: Feldman	<input type="checkbox"/>	<input type="checkbox"/> Admin: Soos
<u>2</u>	<input type="checkbox"/> Sample Prep: Schnell/Doughty/Kauffman	<input type="checkbox"/>	<input type="checkbox"/> Other:

GC SCAN

004

Page:

[illegible]

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of Advisory limits.

Recra LabNet - Lionville Laboratory
GCSC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 08/31/99

RFW LOT # :9908L931

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOW8W0	001	W	99LLC132	08/27/99	09/02/99	09/02/99
BOW8W0	001 MS	W	99LLC132	08/27/99	09/02/99	09/02/99
BOW8W0	001 MSD	W	99LLC132	08/27/99	09/02/99	09/02/99
BOW8W1	002	W	99LLC132	08/27/99	09/02/99	09/02/99
LAB QC:						
BLK	MB1	W	99LLC132	N/A	09/02/99	09/02/99
BLK	MB1 BS	W	99LLC132	N/A	09/02/99	09/02/99

08/31/99

99082 931

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

[illegible]

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-085-02		Page 1 of 100	
Collector Doug Bowers/Brent Porter		Company Contact Chris Cearlock		Telephone No. 372-9574		Project Coordinator TRENT, SJ		Price Code 7N		Data Turnaround 45 Days	
Project Designation 200 Area Source characterization - 200-CW-1 OU - QC Sa		Sampling Location 200 East 200 CW1		SAF No. B99-085							
Ice Chest No. ERC 930		Field Logbook No. EL-1511		Method of Shipment Federal Express							
Shipped To TMA/RECRA 8-27-99		Offsite Property No. A99 0234		Bill of Lading/Air Bill No. 4235 795 28830							
				COA B20CW1 671e							

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HCl or H2SO4 to pH <2 Cool	HNO3 to pH <2			
	Type of Container	P	P	P	aG	P	aGs*	P			
	No. of Container(s)	1	1	1	2	2	3	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			

SAMPLE ANALYSIS		Sulfides - 9030	See item (1) in Special Instructions	NO2/NO3 - 353.1; Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha; Gross Beta	VOA - 8260A (TCL); VOA - 8260A (Add- On) (1- Propanol, Ethanol)	See item (2) in Special Instructions			
------------------------	--	-----------------	--	---	---------------------------	----------------------------	--	--	--	--	--

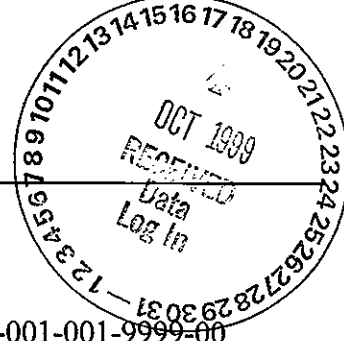
Sample No.	Matrix *	Sample Date	Sample Time	X	X	X	X	X	X	X	X
BOW8W0	Water	8-27-99	0640	X	X	X	X		X	X	
BOW8W1	Water	8-27-99	0520						X		

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS See Chain of Custody comments on SAF for special instructions. COLLECTOR NOT AVAILABLE PERSONAL (1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate), pH (Water) - 9040 (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc)	Matrix * Soil Water Vapor Other Solid Other Liquid	
Relinquished By Doug Bowers	Date/Time 8-27-99/1300	Received By R.F. 1A			Date/Time 8-27-99/1300
Relinquished By R.F. 1A	Date/Time 8/30/99 11:00	Received By Office			Date/Time 8/30/99 1100
Relinquished By Office	Date/Time 8/30/99 1400	Received By PEDEX			Date/Time 8/30/99 1400
Relinquished By Ted G...	Date/Time 8/31/99 0920	Received By Dr. P...			Date/Time 8/31/99 0920

From Non Red area

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

**Recra LabNet Philadelphia
Analytical Report**



Client : TNU-HANFORD B99-085

RFW# : 9908L931

SDG/SAF #: H0509/B99-085

W.O. #: 10985-001-001-9999-00

Date Received: 08-31-99

SEMIVOLATILE

One (1) water sample was collected on 08-27-99.

The sample and its associated QC samples were extracted on 09-01-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 09-08-99.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding times for extraction and analysis were met.
3. Non-target compounds were detected in the sample.
4. The sample was spectrally searched for Butylated Hydroxytoluene; however, it was not identified in the sample.
5. Six (6) of thirty (30) surrogate recoveries were outside EPA QC limits. EPA CLP surrogate recovery criteria were not met for the method blank 99LE1068-MB1. The sample data was not affected. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. All matrix spike recoveries were within EPA QC limits.
7. Two (2) of eleven (11) blank spike recoveries were outside EPA QC limits.
8. The method blank contained the common laboratory contaminants Bis(2-Ethylhexyl)phthalate and Di-n-Octylphthalate at levels less than the CRQL.


J. Michael Taylor

Vice President

Philadelphia Analytical Laboratory

son\group\data\bna\tnu08931.doc

10-13-99

Date

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
A	=	Indicates that a TIC is a suspected aldol-condensation product.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.



GLOSSARY OF BNA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.



Initiator: S Durke RFW Batch: 9908L931
 Date: 9-20-99 Samples: QC
 Client: TNU Hanford Method: SW846/MCAWW/CLP/
H0509

Parameter: BNA
 Matrix: Water
 Prep Batch: 99LE1068
Cont

1. Reason for SDR

a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C
☐ Transcription Error ☐ Wrong Test Code ☐ Other _____

b. General Discrepancy

☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

5 out of 6 surrogates out 10% in the Blank
 1 surrogate + 2 spikes low in the Blank Spike
 Low Recoveries Limited to the Blank + Blank Spike

2. Known or Probable Causes(s)

prep

3. Discussion and Proposed Action

Other Description:

☐ Re-log
☐ Entire Batch
☐ Following Samples: _____
☐ Re-leach
☐ Re-extract
☐ Re-digest
☐ Revise EDD
☐ Change Test Code to _____
☐ Place On/Take Off Hold (circle)

sample data OK
 Narrate

4. Project Manager Instructions...signature/date:

☒ Concur with Proposed Action
☐ Disagree with Proposed Action; See Instruction
☐ Include in Case Narrative
☒ Client Contacted:
 Date/Person Kevin Johnson 9/21/99
☐ Add
☐ Cancel

Kevin Johnson 9/24/99

5. Final Action...signature/date:

Other Explanation:

Verified re-[log][leach][extract][digest][analysis] (circle)
☒ Included in Case Narrative
☐ Hard Copy COC Revised
☐ Electronic COC Revised
☐ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route Distribution of Completed SDR

Route Distribution of Completed SDR

☒ Initiator
☒ Lab Manager: M. Taylor
☒ Project Mgr: Stone/Carey/Schrenkel/Johnson
☒ Section Mgr: Wesson/Daniels
☒ QA (file): Racioppi
☐ Data Management: Feldman
☐ Sample Prep: Schnell/Doughty/Kauffman

☐ Metals: Doughty
☐ Inorganic: Perrone
☐ GC/LC: Schnell
☐ MS: LeMin/Taylor
☐ Log-in: Toder
☐ Admin: Soos
☐ Other: _____

Semivolatiles by GC/MS, HSL List

Report Date: 09/30/99 14:52

Client: TNU-HANFORD B99-085

Work Order: 10985001001

Page: 1a

*= Outside of EPA CLP QC limits.

Cust ID:

BOW8W0

BOW8W0

BOW8W0

SBLKCD

SBLKCD BS

RFW#:

001

001 MS

001 MSD

99LE1068-MB1

99LE1068-MB1

2-Chloronaphthalene	10	U	10	U	10	U	10	U	10	U
2-Nitroaniline	26	U	26	U	26	U	25	U	25	U
Dimethylphthalate	10	U	10	U	10	U	10	U	10	U
Acenaphthylene	10	U	10	U	10	U	10	U	10	U
2,6-Dinitrotoluene	10	U	10	U	10	U	10	U	10	U
3-Nitroaniline	26	U	26	U	26	U	25	U	25	U
Acenaphthene	10	U	55	%	51	%	10	U	48	%
2,4-Dinitrophenol	26	U	26	U	26	U	25	U	25	U
4-Nitrophenol	26	U	31	%	24	%	25	U	32	%
Dibenzofuran	10	U	10	U	10	U	10	U	10	U
2,4-Dinitrotoluene	10	U	56	%	61	%	10	U	75	%
Diethylphthalate	10	U	10	U	10	U	10	U	10	U
4-Chlorophenyl-phenylether	10	U	10	U	10	U	10	U	10	U
Fluorene	10	U	10	U	10	U	10	U	10	U
4-Nitroaniline	26	U	26	U	26	U	25	U	25	U
4,6-Dinitro-2-methylphenol	26	U	26	U	26	U	25	U	25	U
N-Nitrosodiphenylamine (1)	10	U	10	U	10	U	10	U	10	U
4-Bromophenyl-phenylether	10	U	10	U	10	U	10	U	10	U
Hexachlorobenzene	10	U	10	U	10	U	10	U	10	U
Pentachlorophenol	26	U	19	%	20	%	25	U	35	%
Phenanthrene	10	U	10	U	10	U	10	U	10	U
Anthracene	10	U	10	U	10	U	10	U	10	U
Carbazole	10	U	10	U	10	U	10	U	10	U
Di-n-butylphthalate	10	U	10	U	10	U	10	U	10	U
Fluoranthene	10	U	10	U	10	U	10	U	10	U
Pyrene	10	U	59	%	63	%	10	U	95	%
Butylbenzylphthalate	10	U	10	U	10	U	10	U	10	U
3,3'-Dichlorobenzidine	10	U	10	U	10	U	10	U	10	U
Benzo(a)anthracene	10	U	10	U	10	U	10	U	10	U
Chrysene	10	U	10	U	10	U	10	U	10	U
bis(2-Ethylhexyl)phthalate	1	JB	2	JB	3	JB	0.9	J	7	JB
Di-n-octyl phthalate	3	JB	3	JB	3	JB	1	J	0.6	JB
Benzo(b)fluoranthene	10	U	10	U	10	U	10	U	10	U
Benzo(k)fluoranthene	10	U	10	U	10	U	10	U	10	U
Benzo(a)pyrene	10	U	10	U	10	U	10	U	10	U
Indeno(1,2,3-cd)pyrene	10	U	10	U	10	U	10	U	10	U
Dibenz(a,h)anthracene	10	U	10	U	10	U	10	U	10	U
Benzo(g,h,i)perylene	10	U	10	U	10	U	10	U	10	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W8W0

Lab

Lab Name: Recra.LabNet

Work Order: 10985001001

Client: TNU-HANFORD B99-085

Matrix: (soil/water) WATER

Lab Sample ID: 9908L931-001

Sample wt/vol: 960 (g/mL) ML

Lab File ID: A090817

Level: (low/med) LOW

Date Received: 08/31/99

% Moisture: decanted: (Y/N)

Date Extracted: 09/01/99

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 09/08/99

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 2

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	PHTHALATE	25.33	10	J
2.	PHTHALATE	27.36	2	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKCD

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-085

Matrix: (soil/water) WATER

Lab Sample ID: 99LE1068-MB1

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: D090803

Level: (low/med) LOW

Date Received: 09/01/99

% Moisture: decanted: (Y/N)

Date Extracted: 09/01/99

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 09/08/99

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	23.91	6	J
2.	PHthalate	25.00	3	J

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 08/31/99

RFW LOT # :9908L931

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOW8W0	001	W	99LE1068	08/27/99	09/01/99	09/08/99
BOW8W0	001 MS	W	99LE1068	08/27/99	09/01/99	09/08/99
BOW8W0	001 MSD	W	99LE1068	08/27/99	09/01/99	09/08/99

LAB QC:

SBLKCD	MB1	W	99LE1068	N/A	09/01/99	09/08/99
SBLKCD	MB1 BS	W	99LE1068	N/A	09/01/99	09/08/99

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

10

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-085-02		Page <u>1</u> of <u>1</u>	
Collector Doug Bowers/Brent Porter		Company Contact Chris Cearlock		Telephone No. 372-9574		Project Coordinator TRENT, SJ		Price Code 7N		Data Turnaround 45 Days	
Project Designation 200 Area Source characterization - 200-CW-1 OU - QC Sa		Sampling Location 200 East 200 CWI		SAF No. B99-085							
Ice Chest No. ERC 930		Field Logbook No. EL-1511		Method of Shipment Federal Express							
Shipped To TMA/RECRA 8-27-99		Onsite Property No. A99 0234		Bill of Lading/Air Bill No. 4235 795 28830							
				COA B20CWI 671e							

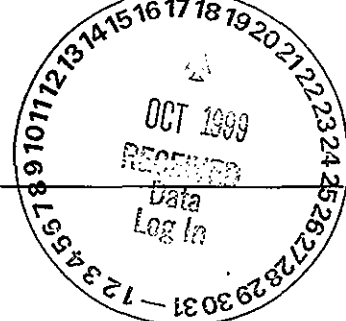
POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HCl or H2SO4 to pH <2 Cool	HNO3 to pH <2			
	Type of Container	P	P	P	aG	P	aGs*	P			
	No. of Container(s)	1	1	1	2	2	3	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			
SAMPLE ANALYSIS		Sulfides - 9030	See item (1) in Special Instructions.	NO2/NO3 - 353.1; Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha; Gross Beta	VOA - 8260A (TCL); VOA - 8260A (Add- On) (1- Propanol, Ethanol)	See item (2) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time								
BOW8W0	Water	8-27-99	0640	X	X	X	X		X	X	
BOW8W1	Water	8-27-99	0520						X		

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <i>Doug Bowers</i> Date/Time <i>8-27-99 1300</i>	Received By <i>Ref 1A</i> Date/Time <i>8-27-99 1300</i>	See Chain of Custody comments on SAF for special instructions. COLLECTOR NOT AVAILABLE P86N (CLs). (1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040 (2) ICP-Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc)	Soil Water Vapor Other Solid Other Liquid	
Relinquished By <i>Ref 1A</i> Date/Time <i>8/30/99 11:00</i>	Received By <i>Chico</i> Date/Time <i>8/30/99 1100</i>			
Relinquished By <i>Chico</i> Date/Time <i>8/30/99 1400</i>	Received By <i>PEDEX</i> Date/Time <i>8/30/99 1400</i>			
Relinquished By <i>Ref 1A</i> Date/Time <i>8/31/99 0920</i>	Received By <i>Dr. P. M. L. H.</i> Date/Time <i>8/31/99 0920</i>			
		From Non Red area		

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

**Recra LabNet Philadelphia
Analytical Report**



Client : TNU-HANFORD B99-085

RFW# : 9908L931

SDG/SAF #: H0509/B99-085

W.O. #: 10985-001-001-9999-00

Date Received: 08-31-99


GC/MS VOLATILE

Two (2) water samples were collected on 08-27-99.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 09-09,10-99.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. Non-target compounds were not detected in the samples.
4. All surrogate recoveries were outside EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL.


J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-13-99

Date

som\group\data\voaltnu08931.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 8 pages.

GLOSSARY OF VOA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.



GLOSSARY OF VOA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.



Volatiles by GC/MS, HSL List

0

Work Order: 10985001001 Page: 1a

*= Outside of EPA CLP QC limits.

Cust ID:

B0W8W0

B0W8W1

B0W8W1

B0W8W1

VBLKOY

VBLKOY BS

RFW#:

001

002

002 MS

002 MSD

99LVN269-MB1

99LVN269-MB1

Chlorobenzene	5 U	5 U	107 %	109 %	5 U	110 %
Ethylbenzene	5 U	5 U	5 U	.5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 08/31/99

RFW LOT # :9908L931

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOW8W0	001	W	99LVN269	08/27/99	N/A	09/10/99
BOW8W1	002	W	99LVN269	08/27/99	N/A	09/10/99
BOW8W1	002 MS	W	99LVN269	08/27/99	N/A	09/10/99
BOW8W1	002 MSD	W	99LVN269	08/27/99	N/A	09/10/99

LAB QC:

VBLKOY	MB1	W	99LVN269	N/A	N/A	09/09/99
VBLKOY	MB1 BS	W	99LVN269	N/A	N/A	09/09/99

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



Client <u>TNU-Hanford B99-085</u>				Refrigerator #		1		6								6		6		6		6							
Est. Final Proj. Sampling Date				#/Type Container		Liquid		3g		2g								1g		1g		1g		1g					
Project # <u>10985-001-001-9999-00</u>				Solid																									
Project Contact/Phone #				Volume		Liquid		40		LIT								LIT		500		LIT		LIT					
RECRA Project Manager <u>OT</u>				Solid														500		2NAC									
QC <u>Spec</u> Del <u>std</u> TAT <u>30 day</u>				Preservatives				HCL										HNO3		HNO3		-		HNO3					
Date Rec'd <u>8/31/99</u> Date Due <u>9/30/99</u>				ANALYSES REQUESTED																									
Account #																													
MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum DL - Drum L - EP/TCLP Leachate WI - Wipe X - Other F - Fish				Lab ID		Client ID/Description		Matrix QC Chosen (✓) MS MSD		Matrix		Date Collected		Time Collected															
				001		BOWSWO				W		8/27/99		0640		✓		✓											
				002		BOWSWI				W		+		0520		✓													

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-085-02		Page 1 of 1 80	
Collector Doug Bowers/Brent Porter		Company Contact Chris Cearlock		Telephone No. 372-9574		Project Coordinator TRENT, SJ		Price Code 7N		Data Turnaround 45 Days	
Project Designation 200 Area Source characterization - 200-CW-1 OU - QC Sa		Sampling Location 200 East 200 CW1		SAF No. B99-085							
Ice Chest No. ERC 830		Field Logbook No. EL-1511		Method of Shipment Federal Express							
Shipped To TMA/RECRA 8-27-99		Offsite Property No. A99 0234		Bill of Lading/Air Bill No. 423579528830							
				COA B20CW1 671e							

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HCl or H2SO4 to pH <2 Cool	HNO3 to pH <2			
	Type of Container	P	P	P	aG	P	aGs*	P			
	No. of Container(s)	1	1	1	2	2	3	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			

SAMPLE ANALYSIS				Sulfides - 9030	See item (1) in Special Instructions.	NO2/NO3 - 353.1; Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha; Gross Beta	VOA - 8260A (TCL); VOA - 8260A (Add- On) (1- Propanol, Ethanol)	See item (2) in Special Instructions.		

Sample No.	Matrix *	Sample Date	Sample Time								
BOW8W0	Water	8-27-99	0640	X	X	X	X		X	X	
BOW8W1	Water	8-27-99	0520						X		

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <i>Doug Bowers</i> Date/Time <i>8-27-99/1300</i>	Received By <i>Ref 1A</i> Date/Time <i>8-27-99/1300</i>	See Chain of Custody comments on SAF for special instructions. COLLECTOR NOT AVAILABLE PERSON (CLs). (1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040 (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc)	Soil Water Vapor Other Solid Other Liquid	
Relinquished By <i>Ref 1A</i> Date/Time <i>8/30/99 11:00</i>	Received By <i>Chico</i> Date/Time <i>8/30/99 11:00</i>			
Relinquished By <i>Chico</i> Date/Time <i>8/30/99 1400</i>	Received By <i>FEDEX</i> Date/Time <i>8/30/99 1400</i>			
Relinquished By <i>Ref 1A</i> Date/Time <i>8/31/99 0920</i>	Received By <i>Dr. P. Smith</i> Date/Time <i>8/31/99 0920</i>			
LABORATORY SECTION Received By _____ Title _____			Date/Time _____	
FINAL SAMPLE DISPOSITION Disposal Method _____			Disposed By _____ Date/Time _____	

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0509 is composed of one liquid (water) sample designated under SAF No. B99-085 with a Project Designation of : 200 Area Source characterization-200-CW-1 OU-QC Sa.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the TNU Sample Receipt Checklist. The results were transmitted to BHI via facsimile on October 1, 1999.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0509

SDG 7190
Contact Kevin C. Johnson

SAMPLE SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0509

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0W8W0	200 East 200 CWI	WATER		N908174-01	B99-085	B99-085-02	08/27/99 06:40
Method Blank		WATER		N908174-03	B99-085		
Lab Control Sample		WATER		N908174-02	B99-085		
Duplicate (N908174-01)	200 East 200 CWI	WATER		N908174-04	B99-085		08/27/99 06:40

SAMPLE SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 10/02/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0509

SDG 7190
Contact Kevin C. Johnson

QC SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0509

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	DEPARTMENT SAMPLE ID
7190	B99-085-02	B0W8W0	WATER				08/31/99	4	N908174-01 7190-001
		Method Blank	WATER						N908174-03 7190-003
		Lab Control Sample	WATER						N908174-02 7190-002
		Duplicate (N908174-01)	WATER				08/31/99	4	N908174-04 7190-004

QC SUMMARY

Page 1

SUMMARY DATA SECTION

Page 4

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 10/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0509

SDG 7190

Contact Kevin C. Johnson

PREP BATCH SUMMARY

Client HanfordContract TRB-SBB-207925Case no SDG-H0509

TEST	MATRIX	METHOD	PREPARATION	ERROR	PLANCHETS ANALYZED					QUALI-	
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG
Gas Proportional Counting											
80A	WATER	Gross Alpha in Water	6893-135	20.0	1			1	1	1/1	
80B	WATER	Gross Beta in Water	6893-135	15.0	1			1	1	1/1	

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

Page 1

SUMMARY DATA SECTION

Page 5

Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVD-PBSVersion 3.06Report date 10/02/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0509

SDG 7190
Contact Kevin C. Johnson

WORK SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0509

CLIENT SAMPLE ID		LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED		SUF-							
CUSTODY	SAF No	RECEIVED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD		
BOWSWO		N908174-01	7190-001	80A/80		09/27/99	10/01/99	NJV	Gross Alpha in Water		
200 East 200 CWI	WATER	08/27/99	7190-001	80B/80		09/27/99	10/01/99	NJV	Gross Beta in Water		
B99-085-02	B99-085	08/31/99									
Method Blank		N908174-03	7190-003	80A/80		09/27/99	10/01/99	NJV	Gross Alpha in Water		
	WATER		7190-003	80B/80		09/27/99	10/01/99	NJV	Gross Beta in Water		
	B99-085										
Lab Control Sample		N908174-02	7190-002	80A/80		09/27/99	10/01/99	NJV	Gross Alpha in Water		
	WATER		7190-002	80B/80		09/27/99	10/01/99	NJV	Gross Beta in Water		
	B99-085										
Duplicate (N908174-01)		N908174-04	7190-004	80A/80		09/27/99	10/01/99	NJV	Gross Alpha in Water		
200 East 200 CWI	WATER	08/27/99	7190-004	80B/80		09/27/99	10/01/99	NJV	Gross Beta in Water		
	B99-085	08/31/99									

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
80A/80	B99-085	Gross Alpha in Water	EPA900.0	1			1	1	1		4
80B/80	B99-085	Gross Beta in Water	EPA900.0	1			1	1	1		4
TOTALS				2			2	2	2		8

WORK SUMMARY

Page 1

SUMMARY DATA SECTION

Page 6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 10/02/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0509

N908174-03

Method Blank

METHOD BLANK

SDG <u>7190</u>	Client/Case no <u>Hanford</u>	SDG-H0509
Contact <u>Kevin C. Johnson</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>N908174-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7190-003</u>	Material/Matrix <u>WATER</u>	
	SAF No <u>B99-085</u>	

ANALYTE	CAS NO	RESULT pCi/L	2 σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.172	0.37	1.0	3.0	U	80A
Gross Beta	12587-47-2	0.124	1.4	2.4	4.0	U	80B

200 Area Src chr 200-CW-1 OU-QC Sa

QC-BLANK 31861

METHOD BLANKS

Page 1

SUMMARY DATA SECTION

Page 7

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>10/02/99</u>

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0509

N908174-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7190</u>	Client/Case no <u>Hanford</u>	<u>SDG-H0509</u>
Contact <u>Kevin C. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N908174-02</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7190-002</u>	Material/Matrix <u>WATER</u>	
	SAF No <u>B99-085</u>	

ANALYTE	RESULT pCi/L	2 σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ADDED pCi/L	2 σ ERR pCi/L	REC %	3 σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	66.4	5.1	1.2	3.0		80A	67.0	2.7	99	68-132	80-120
Gross Beta	77.8	3.7	2.1	4.0		80B	75.7	3.0	103	75-125	

200 Area Src chr 200-CW-1 OU-QC Sa

QC-LCS 31860

LAB CONTROL SAMPLES

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SUMMARY DATA SECTION

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>10/02/99</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0509

N908174-04

B0W8W0

DUPLICATE

SDG 7190

Contact Kevin C. Johnson

DUPLICATE

Lab sample id N908174-04

Dept sample id 7190-004

ORIGINAL

Lab sample id N908174-01

Dept sample id 7190-001

Received 08/31/99

Client/Case no Hanford SDG-H0509

Case no TRB-SBB-207925

Client sample id B0W8W0

Location/Matrix 200 East 200 CWI WATER

Collected 08/27/99 06:40

Custody/SAF No B99-085-02 B99-085

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI- FIERS	RPD %	3σ TOT LIMIT	PROT
Gross Alpha	0.018	0.43	0.88	3.0	U	80A	-0.068	0.37	0.85	U	-		
Gross Beta	0.197	1.1	1.8	4.0	U	80B	-0.656	1.4	2.5	U	-		

200 Area Src chr 200-CW-1 OU-QC Sa

QC-DUP#1 31862

DUPLICATES

Page 1

SUMMARY DATA SECTION

Page 9

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-DUP
 Version 3.06
 Report date 10/02/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0509

N908174-01

BOW8W0

DATA SHEET

SDG <u>7190</u>	Client/Case no <u>Hanford</u>	SDG-H0509
Contact <u>Kevin C. Johnson</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>N908174-01</u>	Client sample id <u>BOW8W0</u>	
Dept sample id <u>7190-001</u>	Location/Matrix <u>200 East 200 CWI</u>	<u>WATER</u>
Received <u>08/31/99</u>	Collected <u>08/27/99 06:40</u>	
	Custody/SAF No <u>B99-085-02</u>	<u>B99-085</u>

ANALYTE	CAS NO	RESULT pCi/L	2 σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.068	0.37	0.85	3.0	U	80A
Gross Beta	12587-47-2	-0.656	1.4	2.5	4.0	U	80B

200 Area Src chr 200-CW-1 OU-QC Sa

DATA SHEETS

Page 1

SUMMARY DATA SECTION

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>10/02/99</u>

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0509

Test 80A Matrix WATERSDG 7190Contact Kevin C. Johnson

METHOD SUMMARY

GROSS ALPHA IN WATER

GAS PROPORTIONAL COUNTING

Client HanfordContract TRB-SBB-207925Case no SDG-H0509

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Gross Alpha
Preparation batch 6893-135				
BOW8W0	N908174-01	80	7190-001	U
BLK (QC ID=31861)	N908174-03	80	7190-003	U
LCS (QC ID=31860)	N908174-02	80	7190-002	ok
Duplicate (N908174-01)	N908174-04	80	7190-004	- U

Nominal values and limits from method RDLs (pCi/L) 3.0
200 Area Src chr 200-CW-1 OU-QC Sa

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/L	MDA L	ALIQ L	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6893-135 2σ prep error 20.0 % Reference Lab Notebook 6893 pg.135																
BOW8W0	N908174-01	80	0.85	0.300				3	100			31	09/23/99	09/27	GRB-110	
BLK (QC ID=31861)	N908174-03	80	1.0	0.300				38	100				09/23/99	09/27	GRB-112	
LCS (QC ID=31860)	N908174-02	80	1.2	0.300				38	100				09/23/99	09/27	GRB-111	
Duplicate (N908174-01) (QC ID=31862)	N908174-04	80	0.88	0.300				1	100			31	09/23/99	09/27	GRB-113	

Nominal values and limits from method 3.0 0.300 5-150 100 180

PROCEDURES REFERENCE EPA900.0
EP-120 Gross Alpha and Gross Beta in Environmental Water,
rev 2

AVERAGES ± 2 SD MDA 0.98 ± 0.32
FOR 4 SAMPLES RESIDUE 20 ± 42

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVD-CMSVersion 3.06Report date 10/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0509

Test 80B Matrix WATERSDG 7190Contact Kevin C. Johnson

METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Client HanfordContract TRB-SBB-207925Case no SDG-H0509

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Gross Beta
Preparation batch 6893-135				
BOW8W0	N908174-01	80	7190-001	U
BLK (QC ID=31861)	N908174-03	80	7190-003	U
LCS (QC ID=31860)	N908174-02	80	7190-002	ok
Duplicate (N908174-01)	N908174-04	80	7190-004	- U

Nominal values and limits from method RDLs (pCi/L) 4.0

200 Area Src chr 200-CW-1 OU-QC Sa

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/L	MDA L	ALIQ L	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6893-135 2σ prep error 15.0 % Reference Lab Notebook 6893 pg.135																
BOW8W0	N908174-01	80	2.5	0.300				<u>3</u>	100				31	09/23/99	09/27	GRB-110
BLK (QC ID=31861)	N908174-03	80	2.4	0.300				38	100					09/23/99	09/27	GRB-112
LCS (QC ID=31860)	N908174-02	80	2.1	0.300				38	100					09/23/99	09/27	GRB-111
Duplicate (N908174-01)	N908174-04	80	1.8	0.300				<u>1</u>	100				31	09/23/99	09/27	GRB-113
(QC ID=31862)																

Nominal values and limits from method 4.0 0.300 5-150 100 180

PROCEDURES REFERENCE EPA900.0
EP-120 Gross Alpha and Gross Beta in Environmental Water,
rev 2

AVERAGES ± 2 SD MDA 2.2 ± 0.63
FOR 4 SAMPLES RESIDUE 20 ± 42

METHOD SUMMARIES

Page 2

SUMMARY DATA SECTION

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Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVD-CMSVersion 3.06Report date 10/02/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0509

SDG 7190
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0509

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/02/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0509

SDG 7190
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0509

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified.
Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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SAMPLE DELIVERY GROUP H0509

SDG 7190
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0509

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/02/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0509

SDG 7190
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0509

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

- U The RESULT is less than the MDA (Minimum Detectable Activity).

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/02/99

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SAMPLE DELIVERY GROUP H0509

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GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.
- Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- * An MDA is underlined if it is bigger than its RDL.

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SAMPLE DELIVERY GROUP H0509

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GUIDE, cont.

Client Hanford
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DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/02/99

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REPORT GUIDE

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Contract TRB-SBB-207925
Case no SDG-H0509

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/02/99

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SDG 7190
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0509

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:
 1. A fixed percentage specified in the protocol.

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
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Report date 10/02/99

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SAMPLE DELIVERY GROUP H0509

SDG 7190

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GUIDE, cont.

Client Hanford

Contract TRB-SBB-207925

Case no SDG-H0509

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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Lab id TMANC

Protocol Hanford

Version Ver 1.0

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Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0509

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- * The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- * The second limits are protocol defined upper and lower QC limits

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
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Report date 10/02/99

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SAMPLE DELIVERY GROUP H0509

SDG 7190
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0509

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- * The recovery is underlined (out of spec) if it is outside either of these ranges.

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
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TMA / RICHMOND

SAMPLE DELIVERY GROUP H0509

SDG 7190

Contact Kevin C. Johnson**REPORT GUIDE**Client HanfordContract TRB-SBB-207925Case no SDG-H0509**METHOD SUMMARY**

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- * Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- * The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- * If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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SUMMARY DATA SECTION

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Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVD-RGVersion 3.06Report date 10/02/99

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SAMPLE DELIVERY GROUP H0509

SDG 7190
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0509

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/02/99

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SAMPLE DELIVERY GROUP H0509

SDG 7190
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0509

METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/02/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0509

SDG 7190
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0509

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/02/99

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-085-02		Page 1 of 1			
Collector Doug Bowers/Brent Porter				Company Contact Chris Cearlock		Telephone No. 372-9574		Project Coordinator TRENT, SJ		Price Code 7N Data Turnaround 45 Days			
Project Designation 200 Area Source characterization - 200-CW-1 OU - QC Sa				Sampling Location 200 East 200 CWI		SAF No. B99-085							
Ice Chest No. ERC 96-068				Field Logbook No. EL-1511		Method of Shipment Federal Express							
Shipped To TMA/RECAR 8-27-99				Offsite Property No. A99 0232		Bill of Lading/Air Bill No. 423579528793							
						COA B20CW1 671C							
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation		ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HCl or H2SO4 to pH <2 Cool	HNO3 to pH <2	
				Type of Container		P	P	P	aG	P	aGs*	P	
				No. of Container(s)		1	1	1	2	2	3	3	
Special Handling and/or Storage				Volume		500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL	
SAMPLE ANALYSIS				Sulfides - 9030		See item (1) in Special Instructions.	NO2/NO3 - 353.1; Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha; Gross Beta	VOA - 8260A (TCL); VOA - 8260A (Add- On) (1- Propanol, Ethanol)	See item (2) in Special Instructions.		
Sample No.		Matrix *		Sample Date		Sample Time							
BOW8W0		Water		8-27-99		0640				X			
BOW8W1		Water		8-27-99		0520				X	X-8-27-99		
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS See Chain of Custody comments on SAF for special instructions. COLLECTOR NOT AVAILABLE TO SIGN COC. (1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040 (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc)					
Relinquished By Brent Porter		Date/Time 8/27/99 12:00		Received By Refer JA		Date/Time 8/27/99 12:00							
Relinquished By DROR IA		Date/Time 8/30/99 11:00		Received By CTRICE KAHL		Date/Time 8/30/99 11:00							
Relinquished By Chase		Date/Time 8-30-99 1400		Received By PEDEN		Date/Time 8/30/99 1400							
Relinquished By FedEx		Date/Time 8-31-99 9:30		Received By TNU M. Goldenberg		Date/Time 8-31-99							
LABORATORY SECTION		Received By				Title		Matrix * Soil Water Vapor Other Solid Other Liquid					
FINAL SAMPLE DISPOSITION		Disposal Method				Disposed By		Date/Time					

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client: <u>Beekel Hanford Inc</u>	Date/Time received <u>8-31-99 9:30</u>		
CoC No. <u>B 99-085-02</u>			
Container I.D. No. <u>ERC96-068</u>	Requested TAT (Days) <u>45</u>	P.O. Received Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
INSPECTION			
1. Custody seals on shipping container intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
2. Custody seals on shipping container dated & signed?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
3. Custody seals on sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
4. Custody seals on sample containers dated & signed?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
5. Cooler Temperature: _____	Packing material is:		Wet <input type="checkbox"/> Dry <input checked="" type="checkbox"/>
6. Number of samples in shipping container: <u>1</u>			
7. Number of containers per sample: <u>2</u> (Or see CoC _____)			
8. Paperwork agrees with samples?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
9. Samples have: Tape <input type="checkbox"/> Hazard labels <input type="checkbox"/> Rad labels <input type="checkbox"/> Appropriate sample labels <input checked="" type="checkbox"/>			
10. Samples are: In good condition <input checked="" type="checkbox"/> Leaking <input type="checkbox"/> Broken Container <input type="checkbox"/> Missing <input type="checkbox"/>			
11. Describe any anomalies: _____ <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 5px;"></div>			
13. Was P.M. notified of any anomalies? Yes <input type="checkbox"/> No <input type="checkbox"/> Date _____			
14. Received by <u>M. Goldenberg</u> Date: <u>8-31-99</u> Time: <u>9:30</u>			
LOGIN			
TNU W.O. No. _____		Group No. _____	
		Client W.O. No. _____	
PROGRAM MANAGER			
Sample holding times exceeded?		Yes <input type="checkbox"/> No <input type="checkbox"/>	
Client Notified: Name _____		Date/time _____	